

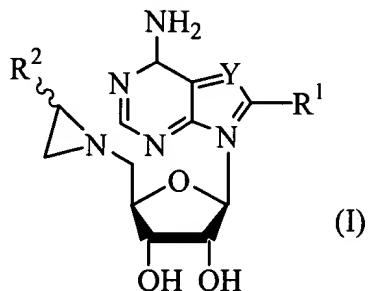
Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-43. Canceled.

44 (New) A compound of formula (I):



wherein:

Y is N or $-CR^3$;

R^1 is H, 3H , $-NH(CH_2)_nNHR^4$ or $-NH(C_2H_5O)_nC_2H_5NHR^4$;

R^3 is H, 3H , $-NH(CH_2)_nNHR^4$ or $-NH(C_2H_5O)_nC_2H_5NHR^4$;

R^2 is H, 3H , or $-CH_2CH(COOH)(NH_2)$;

R^4 is fluorophores, affinity tags, crosslinking agents, chromophors, proteins, peptides, amino acids, nucleotides, nucleosides, nucleic acids, carbohydrates, lipids, PEG, transfection reagents, beads or intercalating agents; and

n is an integer from 1 to 250,

provided, when R^1 is $-NH(CH_2)_nNHR^4$ or $-NH(C_2H_5O)_nC_2H_5NHR^4$, Y is N or CH; and when R^3 is $-NH(CH_2)_nNHR^4$ or $-NH(C_2H_5O)_nC_2H_5NHR^4$, R^1 is H.

45. (New) The compound of claim 44 where Y is N.

46. (New) The compound of claim 45 where R¹ is -NH(CH₂)_nNHR⁴ and R² is hydrogen.
47. (New) The compound of claim 46 wherein n is 1-20.
48. (New) The compound of claim 47 wherein R⁴ is selected from fluorophores, affinity tags, crosslinking agents and chromophors.
49. (New) The compound of claim 48 wherein the fluorophore is BODIPY, coumarin, dansyl, fluorescein, mansyl, pyrene, rhodamines, Texas red, TNS, the cyanine fluorophores Cy2, Cy3, Cy3.5, Cy5, Cy5.5, and Cy7.
50. (New) The compound of claim 49 wherein the fluorophore is dansyl.
51. (New) The compound of claim 50 wherein n is 4.
52. (New) The compound of claim 45 wherein R¹ and R² are each hydrogen.
53. (New) The compound of claim 45 wherein R¹ is hydrogen and R² is -CH₂CH(COOH)(NH₂).
54. (New) The compound of claim 44 wherein Y is CR³ and R¹ is hydrogen.
55. (New) The compound of claim 54 where R³ and R² are each hydrogen.
56. (New) The compound of claim 54 wherein R³ is hydrogen and R² is -CH₂CH(COOH)(NH₂).

57. (New) The compound of claim 54 wherein R³ is -NH(CH₂)_nNHR⁴ and R² is hydrogen.

58. (New) The compound of claim 57 wherein n is 1-20.

59. (New) The compound of claim 58 wherein R⁴ is selected from fluorophores, affinity tags, crosslinking agents and chromophors.

60. (New) The compound of claim 59 wherein the fluorophore is BODIPY, coumarin, dansyl, fluorescein, mansyl, pyrene, rhodamines, Texas red, TNS, the cyanine fluorophores Cy2, Cy3, Cy3.5, Cy5, Cy5.5, and Cy7.

61. (New) The compound of claim 60 wherein the fluorophore is dansyl.

62. (New) The compound of claim 61 wherein n is 4.

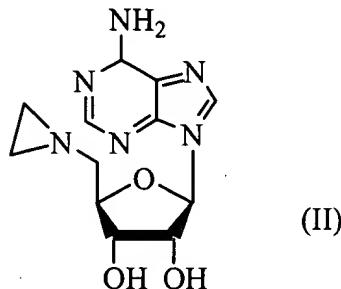
63. (New) The compound of claim 48 or claim 59 wherein the affinity tag is a peptide tag, biotin, digoxigenin or dinitrophenol.

64. (New) The compound of claim 63 wherein the peptide tag is his-tag, or a tag having metal chelating capability that can be used in IMAC, strep-tag, flag-tag, c-myc-tag, epitopes or gultathione.

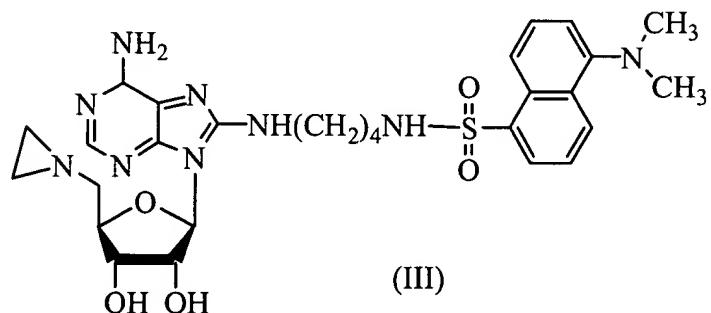
65. (New) The compound of claim 48 or claim 59 wherein the crosslinking agent is maleimide, iodoacetamide or a photo crosslinking agent.

66. (New) The compound of claim 65 wherein the photo crosslinking agent is arylazide, a diazo compound or a benzophenone compound.

67. (New) A compound of Formula (II):



68. (New) A compound of Formula (III):



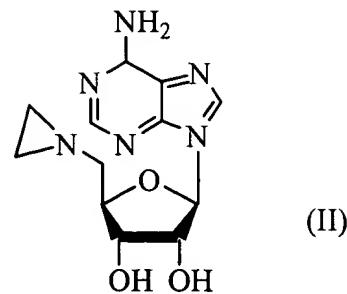
69. (New) A complex comprising a compound of claim 1 and a methyltransferase capable of using S-adenosyl-L-methionine (SAM) as a cofactor.

70. (New) The complex of claim 69 wherein the methyltransferase targets a target molecule selected from the group consisting of a nucleic acid, a polypeptide, a protein, an enzyme and a small molecule.

71. (New) The complex of claim 70 wherein the nucleic acid is a DNA or an RNA.

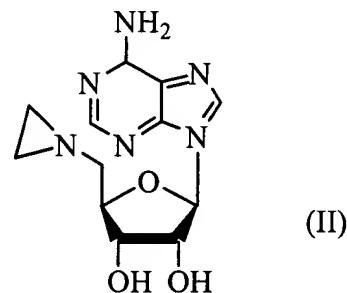
72. (New) The complex of claim 71 wherein the DNA is M.Taq1 or M. Hha1.

73. (New) The complex of claim 72 comprising a compound of Formula (II):



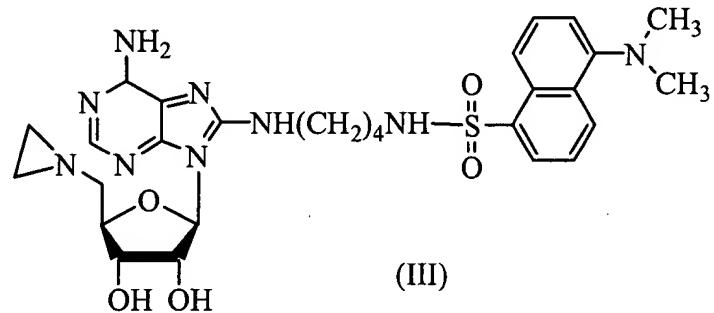
and M.Taq1.

74. (New) The complex of claim 72 comprising a compound of Formula (II):



and M.Hhal.

75. (New) The complex of claim 72 comprising a compound of Formula (III):



and M.Taq1.

76. (New) The complex of claim 69 wherein the methyltransferase is part of a restriction modification system of a bacterium.

77. (New) The complex of claim 69, wherein the methyltransferase methylates proteins at distinct amino acids.
78. (New) A kit comprising a compound of claim 1.
79. (New) A kit comprising a complex of claim 69.
80. (New) A pharmaceutical composition comprising a compound of claim 1 or a complex of claim 69.
81. (New) A diagnostic composition comprising a compound of claim 1 or a complex of claim 69.
82. (New) A method for modifying a target molecule comprising the following steps:
 - providing a compound of claim 1;
 - providing a methyltransferase capable of using S-adenosyl-L-methionine (SAM) as a co-factor;
 - providing a target molecule, the target molecule being a suitable substrate of the methyltransferase; and
 - contacting the target molecule with the compound in the presence of the methyltransferase such that the target molecule is modified by the compound.
83. (New) The method of claim 82, wherein the modification of the target molecule is achieved by using the compound as a cofactor of the methyltransferase which transfers the compound or part of the compound onto the target molecule.
84. (New) The method of claim 82, wherein the target molecule is a nucleic acid molecule, a polypeptide, a synthetic polymer or a small molecule.

85. (New) The method of claim 84, wherein the nucleic acid molecule is DNA, RNA or a hybrid thereof.

86. (New) The method of claim 84, wherein the small molecule is a lipid.

87. (New) The method of claim 84, wherein the polypeptide is a protein or a fusion protein comprising a methylation site.

88. (New) A method for the preparation of a modified target molecule comprising the following steps:

providing a compound of claim 1;

providing a methyltransferase capable of using S-adenosyl-L-methionine (SAM) as a co-factor;

providing a target molecule, the target molecule being a suitable substrate of the methyltransferase; and

incubating the target molecule with the compound in the presence of the methyltransferase under conditions which allow the transfer of the compound or part of it onto the target molecule.

89. (New) The method of claim 88, wherein the target molecule comprises a nucleic acid molecule, a DNA, an RNA, an RNA/DNA hybrid, a polypeptide, a fusion protein, a synthetic polymer, a small molecule or a lipid.

90. (New) A compound prepared by the method of claim 88.